

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A transmitting apparatus comprising:

a data dividing part for dividing given data in a unit of bit;

a bit adding part for adding predetermined bits to bits of main data in accordance with quality of an environment to produce hybrid bit data; [[and]]

a data transmission characteristic measuring part for measuring a data transmission characteristic in a communication path, wherein the bit adding part operates to acquire a value of the data transmission characteristic from the data transmission characteristic measuring part and to decide quality of an environment in the communication path on the basis of the level of the acquired value of the data transmission characteristic; and

a modulating part for performing modulation on the basis of the produced hybrid bit data to create and output a modulated signal,

wherein the bit adding part operates to add redundant bits to each of bits of the main data to produce the hybrid bit data when it is decided by the data transmission characteristic measuring part that the environment of the communication path is defective; and

wherein the bit adding part operates to add bits of association data to each of bits of the main data instead of the redundant bits to produce the hybrid bit data when it is decided by the data transmission characteristic measuring part that the environment of the communication path is non-defective, the association data being associated with and distinct in contents from the main data and obtained by utilizing additional information for expansion of services.

2. (Original) The transmitting apparatus according to claim 1, wherein the bit adding part operates to arrange symbols of the hybrid bit data such that a Euclidian distance of the hybrid bit data added with the redundant bits is extended.

3. (Original) The transmitting apparatus according to claim 1, wherein the bit adding part operates to add the redundant bits to the respective bits of the main data such that a gray code is produced.

4. (Previously Presented) The transmitting apparatus according to any one of claims 1 to 3, the data transmission characteristic measuring part comprising a received signal strength indicator measuring part that measures a received signal strength indicator of a data transmission destination, wherein the bit adding part operates to acquire the received signal strength indicator from the received signal strength indicator measuring part and decide quality of an environment in the communication path on the basis of a level of the received signal strength indicator acquired.

5. (Original) The transmitting apparatus according to any one of claims 1 to 3, wherein the bit adding part operates to acquire at least one piece of information among the received signal strength indicator measured by a data transmission destination, a vector error of a demodulated wave, and a bit error and decide quality of an environment of the communication path on the basis of the information acquired.

6. (Original) The transmitting apparatus according to any one of claims 1 to 3, wherein the modulating part performs modulation in accordance with a multi-value FSK system.

7. (Currently Amended) A receiving apparatus that receives a signal produced on the basis of hybrid bit data obtained by adding predetermined bits to respective bits

of main data, the predetermined bits including redundant bits and bits of distinct data associated with the main data, the apparatus comprising:

 a demodulating part that demodulates the signal received;

 a symbol deciding part that applies, at every Nyquist interval, symbol decision to the signal demodulated by the demodulating part to produce a symbol value;

 a bit converting part that converts the symbol value produced by the symbol deciding part into a bit value; and

 a data recovering part that combines respective bits of the main data to recover original main data from the bit value converted by the bit converting part, combines bit data added to the respective bits of the main data to form combined data, decides validity of the combined data formed, recovers data decided as valid as additional data, deletes the added predetermined bits when it is decided that the combined data is invalid, and combines the bit data from which the added predetermined bits are deleted to recover original data.

8. (Previously Presented) The receiving apparatus according to claim 7, wherein the data recovering part operates to decide validity of the combined data formed by combining the added bit data in accordance with a cyclic redundancy check.

9. (Currently Amended) A method for transmitting data, the method comprising the steps of:

 dividing given data in a unit of bit;

 adding predetermined bits to bits of main data in accordance with quality of an environment to produce hybrid bit data;

 measuring part for measuring a data transmission characteristic in a communication path, wherein the bit adding step performs a process of acquiring a value of the data transmission characteristic measured in the data transmission characteristic measuring step and to decide quality of an environment in the

communication path on the basis of a level of the acquired value of the data transmission characteristic; and

performing modulation on the basis of the produced hybrid bit data to create and output a modulated signal,

wherein the bit adding step performs a process of adding redundant bits to each of bits of the main data to produce the hybrid bit data when it is decided in the data transmission characteristic measuring step that the environment of the communication path is defective, and

wherein the bit adding step performs a process of adding bits of association data to each of bits of the main data instead of the redundant bits to produce the hybrid bit data when it is decided in the data transmission characteristic measuring step that the environment of the communication path is non-defective, the association data being associated with and distinct in contents from the main data and obtained by utilizing additional information for expansion of services.

10. (Currently Amended) A data receiving method of receiving a signal produced on the basis of hybrid bit data obtained by adding predetermined bits to respective bits of main data, the predetermined bits including redundant bits and bits of distinct data associated with the main data, the method comprising the steps of:

demodulating the signal received;

applying, at every Nyquist interval, symbol decision to the signal demodulated to produce the symbol value;

converting the symbol value obtained by performing the symbol decision into a bit value;

combining respective bit data of the main data to recover original main data from the bit value obtained by the bit converting step; and

combining the predetermined bits added to the respective bits of the main data to form combined data from data of the bit value obtained by the bit converting step to

form combined data, deciding validity of the combined data formed, recovering data decided as valid as additional data, deleting the added predetermined bits when it is decided that the combined data is invalid, and combining that bit data from which the added predetermined bits are deleted to recover original data.

11. (Currently Amended) A computer program that causes a computer to execute the processing steps of:

dividing given data in a unit of bit;

adding predetermined bits to bits of main data in accordance with quality of an environment to produce hybrid bit data;

measuring part for measuring a data transmission characteristic in a communication path, wherein the bit adding step performs a process of acquiring a value of the data transmission characteristic measured in the data transmission characteristic measuring step and to decide quality of an environment in the communication path on the basis of a level of the acquired value of the data transmission characteristic; and

performing modulation on the basis of the produced hybrid bit data to create and output a modulated signal,

wherein the bit adding step performs a process of adding redundant bits to each of bits of the main data to produce the hybrid bit data when it is decided in the data transmission characteristic measuring step that the environment of the communication path is defective, and

wherein the bit adding step performs a process of adding bits of association data to each of bits of the main data instead of the redundant bits to produce the hybrid bit data when it is decided in the data transmission characteristic measuring step that the environment of the communication path is non-defective, the association data being associated with and distinct in contents from the main data and obtained by utilizing additional information for expansion of services.

12. (Currently Amended) A computer program for causing a computer to execute a method of receiving a signal produced on the basis of hybrid bit data obtained by adding predetermined bits to respective bits of main data, the predetermined bits including redundant bits and bits of distinct data associated with the main data, the method comprising steps of:

demodulating a signal received;

applying, at every Nyquist interval, symbol decision to the signal demodulated to produce a symbol value;

converting the symbol value produced by the symbol decision into a bit value;

combining respective bit data of the main data to recover original main data from data of the bit value converted; and

combining the predetermined bits added to the respective bits of the main data to form combined data from data of the bit value converted, deciding validity of the combined data formed, recovering data decided as valid as additional data, deleting the added predetermined bits when it is decided that the combined data is invalid, and combining the bit data from which the added predetermined bits are deleted to recover original data.